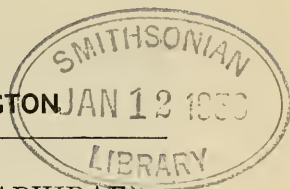


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON



THREE NEW SPECIES OF *CINARA* (APHIDAE)

By F. C. HOTTES

It is a pleasure to acknowledge the assistance of Dr. L. G. Gentner, Prof. Carl Johansen and Mr. M. J. Forsell who sent me material for one of the new species described herewith.

Cinara caliente n. sp.

Apterous viviparous female.

Size and color.—Length from vertex to end of anal plate varying from 2.02-2.17 mm. Width of head through eyes .47 mm.. Head dusky-gray if no powder is present, if with powder, dusky, mottled with powder, the powder not being uniform in distribution. Mid dorsal region of thorax black, lateral regions of thorax with much powder and almost white. Black portion of prothorax narrow, that of mesothorax somewhat wider, that of metathorax still more extensive and as a rule more or less split in the mid posterior region. First abdominal segment black, except for median region. Sometimes the black on the thorax and the first abdominal segment gives the appearance of an inverted V, the arms of which extend lateral to the abdomen. Remainder of abdomen except for cornicles which are black, dusky-gray more or less mottled with powder, the dusky being more abundant between the cornicles, and extending from them in an irregular pattern towards the middle. First and second antennal segments dusky, base of third, fourth and fifth antennal segments white, with the tips of the segments light dusky, all of the sixth antennal segment dusky. Femora with proximal region white, remainder dusky. Tibiae with short dusky region near base followed by a clear area to about the middle, remainder of tibiae dusky.

Head and thorax.—Antennal segments with the following lengths: III .27-.32 mm., IV .10-.13 mm., V .17 mm. VI .09 + .02-.03 mm. Sensoria distributed as follows: III 0-1 almost always none, IV none, V 1 with primary sensorium always present. Antennal hair very sparse, rather spine-like, less than half width of segment in length. All antennal segments except the extreme tip of the sixth smooth. Hairs on anterior portion of head slightly longer than on the third antennal segment, of the same type and rather sparse. Marginal sensoria on sixth antennal segment small, few in number and often difficult to determine. Ocular tubercles present but very small, much rounded. Rostrum when extended reaching beyond metathorax, in a few cases almost reaching the anterior portion of the cornicles. Hair on femora short, almost spine-like. Hind tibiae 1.29 mm. in length. Hair on hind tibiae slightly longer than width of tibiae on outer margin slightly shorter than width on inner, rather sparse, and spine-like, set at an angle of

about forty-five degrees. Hair at apex of tibiae longest. First tarsal segment with about eight hairs on the ventral surface, these are located on the apical half of the segment, these hairs are rather short. Hairs on dorsal surface of second tarsal segment fewer and longer than those on the ventral surface, they are also more spine-like.

Abdomen.—Dorsum of abdomen with a few short spine-like hairs, hairs on ventral surface numerous, longer and finer than those on the dorsum. Dorsum of abdomen with a few small irregular shaped pigment spots, these show no particular arrangement and vary in size. These spots are more or less wrinkled and suggest the pigmented spots on the dorsum of *C. laricis* (Hartig) except for size, the larger spots as a rule have two hairs, the smaller ones one. Hair on the dorsum is not confined to the pigmented spots, in length it is about .02 mm. or only slightly more. Outer base of cornicles very irregular, varying from .20-.25 mm. Cornicles provided with very few hairs, in most cases not more than six, rarely eight, and often as few as four, these may be as short as those on the dorsum of the abdomen, or slightly longer. Transverse pigmented areas anterior to cauda very irregular in outline more or less united, and with about three hairs on each half. Hairs on cauda confined largely to outer margin.

Alate viviparous female.

This form which varies from 1.80-2.10 mm. in length is suggestive of the apterous viviparous female in color of head and abdomen. The thoracic lobes are gray or more or less white if provided with powder, the powder being as a rule rubbed on the edges of the lateral lobes. Secondary sensoria with the following distribution: III zero—2, IV zero to 1, V 1. The third antennal segment always with a primary sensorium, this may be present or lacking on the fourth antennal segment, so that this segment may be without sensoria, fifth segment with primary sensorium. Media of fore wings two branched, the second branch closer to the margin of wing than to the first branch. Veins pale. Hind tibiae about 1.45 mm. in length. Hairs on hind tibiae longer than those of apterous viviparous female, and slightly more numerous. Lateral portions of lateral thoracic lobes free from hair. Anterior median thoracic lobe free from hairs, posterior thoracic lobe with only a few. Dorsum of abdomen free from pigmented spots. Transverse pigmented spots anterior to cauda very small divided, with three or four hairs on the posterior margin.

Oviparous female.

Similar to apterous viviparous female except for region posterior to cornicles which has a heavy coat of powder, this may extend forward in the mid dorsal region to the middle of the cornicles, and in some few cases extend to and slightly cover the posterior margin of the cornicles. The hind tibiae are only slightly swollen, the sensoria on them extend the full length of the tibiae, but are not numerous. The cornicles of this form have a smaller base than the viviparous females, and the dorsum of the abdomen is almost free from pigmented spots, the few present being extremely small.

Alate male.

Head and thorax dusky, older specimens have little powder, the

higher regions of the thoracic lobes being almost shining, the median thoracic lobe alone with heavy powder. Abdomen more or less greenish-gray, with some powder through which some dusky areas show. Mounted specimens show no pigmented spots on the dorsum of the abdomen. Length from vertex to end of anal plate about 2.10 mm. Secondary sensoria distributed as III 24-27, IV 5-7, V 4-6, VI 0-1.

In Palmer's key to the genus *Cinara* in "Aphids of The Rocky Mountain Region" this species keys to *C. atra* G&P. *C. caliente* differs greatly from *C. atra*, and it is necessary to mention only a few outstanding differences. *C. atra* is without powder, is black and shining, the first tarsal segment has extremely long somewhat curved or bent hairs on the ventral surface, the male is apterous, the fourth rostral segment is longer, and the alate viviparous female has more secondary sensoria on the third antennal segment.

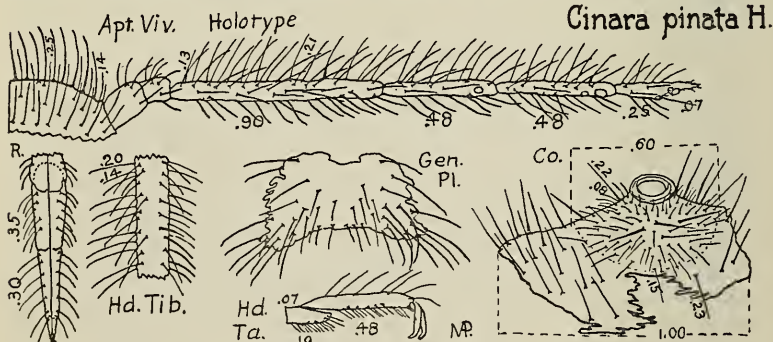
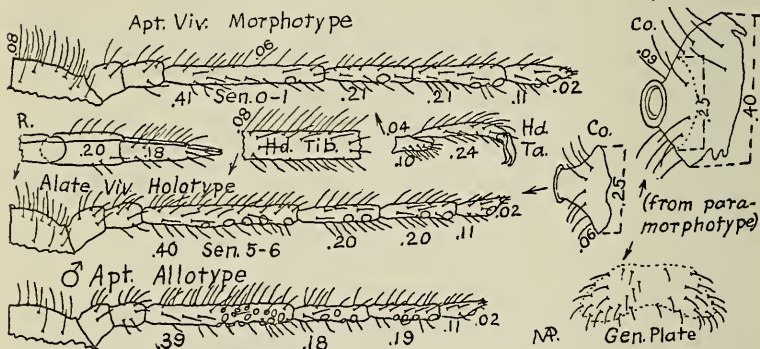
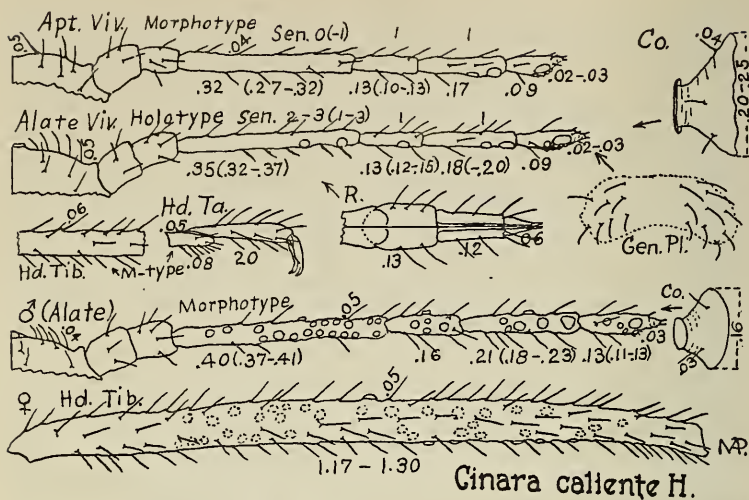
This species was first taken on two atypic much stunted trees of *Pinus edulis*. The terminal branches of which were extremely long and very very thin, and free from needles for long distances. The specimens being taken on the needle free areas in small groups. It was taken on no other trees, and was reared on the branches of other trees only with great difficulty and high mortality, after becoming established on the new host branches, equal difficulty was experienced, when the specimens were transferred to branches of the original host. Type locality seventeen miles south west of Delta, Colorado, on the road to Twenty-five Mile Mesa. Holotype, morphotypes and allotype reared in Grand Junction, Colorado on original material.

Holotype, alate viviparous female Aug. 15, 1955, morphotype, apterous viviparous female Aug. 12, 1955, morphotype, oviparous female Sept. 26, 1955, allotype, alate male Sept. 17, 1955, all reared in Grand Junction, Colorado. All types deposited in the United States National Museum.

Cinara pinata n. sp.

Apterous viviparous female.

Size and color, head.—Length of body from vertex of head to end of anal plate varying from 2.97-3.36 mm. Head and thorax dark dusky-brown with just a trace of powder. Dorsum of thorax with two small black spots to each segment. Dorsum of abdomen varying with season, in summer, deep brown to almost bronze, when thus, with a yellowish mid dorsal line and free from powder. In fall darker brown to deep dusky-brown, when thus with a median somewhat broken line of powder, and with a small patch of powder anterior to each cornicle, this powder may be only a small dash. Cornicles very dark brown and shining. Between the cornicles there are two L shaped areas back to back, these are dull black, and are separated from each other either by the yellowish line or the line of powder. The rest of the dorsal surface of the abdomen is only moderately polished and rather rough, mounted specimens show this surface reticulated. First and second antennal segments similar to head. Third antennal segment yellowish except for apex which is dusky. Fourth and fifth antennal segments with basal half or more yellowish, remainder dusky. Sixth segment dusky. Sensoria with following distribution: III 0-1 the sensorium if present is small, and may not be primary, IV 0-2, if only one sensorium is present it is apt to be



far removed from the apex, V 2, the primary sensorium on this segment is large and has a wide rim. The primary sensorium on the sixth segment is large, has a wide rim, the marginal sensoria are few in number, have wide rims and are far removed from the primary. Unguis of sixth segment very short. Hair on antennae numerous rather upstanding about .06 mm. in length, the longest being just longer than the width of segment. Hair on sixth segment numerous for this segment. Length of antennal segments as follows: III .41 mm., IV .15-.24 mm., V .17-.25 mm., VI .1 + .02 mm. Width of head through the eyes .67-.71 mm. Hair on dorsum of head .06-.08 mm. in length. Median suture of head narrow. Ocular tubercles moderately well developed. Extended rostrum reaching to or slightly beyond cornicles.

Thorax.—Mesosternal tubercle present but not well developed. Femora dusky-brown except for region near body which is yellowish. Tibiae with extreme base dusky, this area is followed by a yellowish region and this in turn is followed by dusky, the yellowish area is more extensive on the pro and mesothoracic tibiae than on the metathoracic tibiae. Hair on hind tibiae numerous, curved from the middle downwardly, about .06 mm. in length on the outer margin and less on the inner. Length of hind tibiae 1.93-2.14 mm. First tarsal segment .11 mm. in length, second tarsal segment .24-.26 mm. in length. The first tarsal segment has about twenty hairs on the ventral surface. The ventral surface of the second tarsal segment has the hairs more numerous than those on the dorsal surface, these hairs are also slightly shorter than the hairs on the dorsum of this segment.

Abdomen.—Base of cornicles varying from .25-.40 mm. Outer margin of cornicles very irregular, mounted specimens show the cornicles two toned, the rim being much darker than the base. Hair on cornicles few, most numerous on the darker area. The dorsum of the abdomen has few hairs. The dorsum of the abdomen is reticulated, the reticulations are very small and very fine. Transverse pigmented spots large, provided with a row of long fine hairs on the posterior margin, anterior to these there are two irregular shaped much broken pigmented spots, these have a few short spine-like hairs. The cauda is pale at the base, the hair being restricted to the posterior margin.

Alate viviparous female.

Color not observed when alive. Length from vertex to end of anal plate 2.9 mm. Antennal segments with the following lengths: III .40-.44 mm., IV .19-.23 mm., V .21-.27 mm., VI .1-.11 + .02-.03 mm. Sensoria distributed as follows: III 3-5 secondary in a row plus primary sensorium, IV none to one secondary plus primary, V one plus primary. Length of hair on third antennal segment varying from .05-.07 mm. rather numerous and upstanding. Width of head through the eyes .65-.70 mm. Rostrum reaching almost to end of abdomen. Hind tibiae varying from 2.1-2.4 mm. Hair on hind tibiae numerous about .08 mm. in length, fine and sharp-pointed, rather more numerous towards the apex. Width of base of cornicles .26-.30 mm. Media of fore wings twice branched the second branch about mid way between the first and the margin of the wing. The media of the holotype is not typical.

Oviparous female.

This form is quite similar to the apterous viviparous female, as a rule specimens are darker in color, but have no more powder, the mid line of powder on the dorsum may be lacking. The basal half of the hind tibiae is quite swollen and it is on this half that most of the sensoria are confined, few if any extending beyond the middle. The sensoria even on the basal half are extremely difficult to differentiate, but are numerous if not typical.

Apterous male.

In color this form is similar to immature females, being gray with patches of powder in front of cornicles. It is 2.17 mm. in length. The antennal segments have the following lengths: III .39, IV .18 mm., V .19 mm., VI .11 + .02 mm. Secondary sensoria distributed as follows: III 13-17, IV 5, V 1-2. The primary sensorium on the third antennal segment is small, the primary sensoria on the fourth and fifth segments are normal in size. Care must be used to differentiate the secondary sensoria on the third segment from the base of the hairs, the two being of the same size and color.

This species was collected on *Pinus edulis*. On this host it feeds on the bark of four or five year old branches and in a few cases on branches which are younger. The colonies are always small, apparently new colonies are established when the colonies cover about an inch of branch.

I suspect that this species is most closely allied to *C. pinona* H. From *pinona* it differs in the following respects to mention only a few, the unguis is very much shorter, the antennae have more hair, the hair on the tibiae are less abundant also less drooping.

Holotype, alate viviparous female Aug. 2, 1955, Morphotype, apterous viviparous female Aug. 25, 1955, Morphotype, oviparous female Oct. 5, 1955, Allotype, apterous male September 29, 1955. All types taken on type tree, growing just north of the parking area adjacent to the picnic grounds of the Colorado National Monument, Fruita, Colorado. All types deposited in the United States National Museum. Numerous specimens were reared on branches.

Cinara sonata n. sp.*Apterous viviparous female.*

Size and general color.—Length from vertex to end of anal plate varying from 5.25-7 mm. Dr. Louis G. Gentner, of the Southern Oregon Branch Experiment Station, Medford, Oregon, who collected some of the specimens from which this species is described, kindly supplied the following color notes "Dull reddish-brown, with darker appendages, and with black markings on dorsum and a black blotch around each cornicle." The first antennal segment is concolorous with the head, the second segment is not quite so dark, the third and fourth antennal segments are yellowish except for the apical portions of the segment, which are dusky, the dusky area on the fourth segment being the most extensive. The fifth and sixth antennal segments have the dusky area equal to about half of the segment. The femora are black except for the extreme basal portion. The prothoracic tibiae are black throughout,

the meso and metathoracic tibiae are black, however some specimens show a very dark brownish area a short distance below the basal end, this area is always short. The tarsi are black. The cornicles are black.

Head and thorax.—Antennal segments with the following lengths: III .75-1.05 mm., IV .40-48 mm., V .45-.58 mm., VI .225-.27 mm. + .07 mm. The third antennal segment is without sensoria, the fourth antennal segment may lack secondary sensoria, or have one or two, all sensoria on this segment are small. The fifth antennal segment has one secondary sensorium and the primary. Antennal hair numerous, upstanding, that on anterior margin of third segment more abundant than that on posterior margin of segment, and about .20-.21 mm. in length. Only the sixth antennal segment imbricated. Hind tibiae about 4.00 mm. in length. Hair on hind tibiae numerous, upstanding varying on outer margin from .14-.20 mm. in length. Hair on inner margin of hind tibiae more numerous, finer and shorter than hair on outer margin, also less upstanding. First tarsal segment about .18 mm. in length, ventral surface with numerous hairs, these are difficult to count, but number more than twenty and in one case twenty-seven. The mesosternal tubercle is absent.

Abdomen.—Cornicles with the base very irregular and deeply and irregularly indented on both sides. The base of the cornicles measure from .90-1.00 mm. the long way. The cornicles are provided with numerous hairs, which vary in length from .08-.22 mm. in length. The longest hairs being spine-like, the other hairs of which there are about two lengths are much finer, the shortest hair being the finest, and confined for the most part to the constricted area of the cornicle. The dorsum of the abdomen has many hairs, these are of various lengths and character, the longest being about .16 mm. in length, the shortest and finest about .105 mm. in length. The dorsum of the abdomen has numerous pigmented spots, these are the largest posterior to the cornicles. The pigmented spots are without arrangement, vary greatly in size, and shape, most have hairs. Pigmented spots anterior to the cauda with two rows of long hairs along the posterior margin. Hairs confined to posterior margin of cauda.

This species is most closely allied to *Cinara abieticola* (Chol.) and differs from specimens of that species collected in Europe and America as follows: The pigmented spots on the dorsum of the abdomen are smaller and are not arranged in two rows, the cornicles are larger, and are deeply indented along the outer margin, the outer margin of the cornicle is very irregular, the tarsal segments are much longer, the first tarsal segment has more hairs on the ventral surface.

All specimens of this species were collected on *Abies*. Holotype, taken on *Abies grandis*, Priest Lake, Idaho, Aug. 28, 1954 by Prof. Carl Johansen of the Department of Entomology, State College of Washington. Paratypes as follows: *Abies magnifica* var. *shastensis* L. G. Gentner, Mt. Ashland, Oregon Sept. 2, 1954, *Abies concolor*, M. J. Forsell, Seattle, Washington, Aug. 20, 1955, and L. G. Gentner, Mt. Ashland, Oregon Aug. 12, 1955, on *Abies magnifica* var. *shastensis*. Holotype deposited in the United States National Museum.